

# ABSTRACT

The present invention relates to a semiconductor optoelectronic waveguide having an n-in-type hetero structure which is able to stably operate as an optical modulator. On the upper and lower surfaces of the core layer 11 determined for the structure so that electro-optical effects are effectively exerted at an operating light wavelength and at the same time light absorption poses no problem are provided with intermediate clad layers (12-1 and 12-2) having a band gap which is greater than that of the core layer 11 in order to prevent carriers generated by light absorption from being trapped by the hetero interface. Respectively on the upper surface of the intermediate clad layer 12-1 and the lower surface of the intermediate clad layer 12-2 are provided the clad layers 13-1 and 13-2 having the band gap which is greater than those of the intermediate clad layers. On the upper surface of the clad layer 13-1 are sequentially laminated a p-type layer 15 and an n-type layer 16. In the applied voltage range used under an operating state, a whole region of the p-type layer 15 and a part or a whole region of the n-type layer 15 are depleted.